AMENDMENTS TO THE CLAIMS

1-2. (Cancelled)

3. (Previously Presented) The system according to claim 19, wherein the audio input unit includes:

a combination of sound source input devices having:

a single channel microphone with a single microphone;

a stereo microphone with at least two microphones;

a dummy head microphone whose shape is like a head of a human body;

an ambisonic microphone receiving the sound sources after dividing them into signals and volume levels, each moving with a given trajectory on 3-D X, Y, and Z coordinates; and

a multi-channel microphone receiving multitrack audio signals; and

a source separation/3-D information extractor separating the sound sources applied from the combination of the sound source input devices by objects, and extracting 3-D information.

4. (Previously Presented) The system according to claim 19, wherein the audio editing/producing unit includes:

a router/audio mixer dividing the sound sources applied in the multi-track format into a plurality of sound source objects and background sounds;

a scene editor/producer editing an audio scene and producing the edited audio scene by using 3-D information and spatial information of the sound source objects and background sound objects divided by the router/audio mixer; and

a controller providing a user interface so that the scene editor/producer edits an audio scene and produces the edited audio scene under the control of a user.

5. (Previously Presented) The system according to claim 19, wherein the audio encoding unit includes:

a data encoding block encoding each set of data divided into background sound objects, sound source objects, and audio scene information output from the audio editing/producing unit; and

a multiplexer multiplexing object data of the background sound, data of the sound sources, and data of the audio scene information encoded by the data encoding block into a single signal, and transmitting the same.

6. (Previously Presented) The system according to claim 5, wherein the data encoding block includes:

an audio object encoder encoding the sound objects;

an audio scene information encoder encoding the audio scene information; and

a background sound object encoder encoding the background sounds.

7. (Cancelled)

8. (Previously Presented) The method according to claim 20, wherein each of the sound source objects further includes 3-D information for a relative sound source object by grouping the sound source objects that have to be controlled by groups.

9. (Currently Amended) An object-based three-dimensional audio terminal system comprising:

an audio decoding unit demultiplexing and decoding a multiplexed audio signal including object sounds, background sounds, and scene information applied through a medium wherein the audio decoding unit comprises a demultiplexer for demultiplexing data applied through the medium and multiplexed to separate them into background sound object data, sound source data, and audio scene information data and a decoder for decoding the background sound object data, the sound source data, and the audio scene information data separated by the demultiplexer;

an audio scene-synthesizing unit selectively synthesizing the object sounds with the audio scene information decoded by the audio decoding unit into a 3-D audio scene under the control of a user, the audio scene-synthesizing unit including a sound source object processor for receiving

the background sound objects, the sound source objects and the audio scene information data and an object mixer for mixing the sound source objects processed by the sound source object processor with the background sound objects decoded by the audio decoding unit to output the results;

a user control unit providing a user interface so as to selectively synthesize the audio scene by the audio scene synthesizing unit under the control of the user, wherein the sound source object processor further includes a motion processor analyzing a plurality of sound source data and the audio scene information, calculating a location of each sound source object moving with its particular trajectory, and modifying its trajectory under the control of the user through the user control unit; and

an audio reproducing unit reproducing the 3-D audio scene synthesized by the audio scene-synthesizing unit.

10. (Cancelled)

11. (Previously Presented) The system according to claim 9, wherein the sound source object processor receives the background sound objects, the sound source objects, and the audio scene information decoded by the audio decoding unit to process the sound source objects and audio scene information according to a motion, a relative location between the sound source objects, and a three-dimensional location of the sound source objects, and spatial characteristics under the control of the user.

12. (Currently Amended) The system according to claim 9, wherein the sound source object processor further includes:

~~a motion processor analyzing a plurality of sound source data and the audio scene information, calculating a location of each sound source object moving with its particular trajectory, and modifying its trajectory under the control of the user through the user control unit;~~

a group object processor calculating a relative location of the respective sound source objects when a plurality of the sound source objects is grouped, and controlling the relative location of the sound source objects under the control of the user through the user control unit;

a 3-D sound localization processor providing each sound source object having a location defined on 3-D coordinates with directivity in response to a listener's location under the control of the user control unit; and

a 3-D space modeling processor providing a sense of closeness and remoteness and spatial effects to each sound source object according to characteristics of a 3-D space.

13. (Original) The system according to claim 9, wherein the audio reproducing unit includes:

an acoustic environment equalizer equalizing the acoustic environment between a listener and a reproduction system in order to accurately reproduce the 3-D audio transmitted from the audio scene synthesizing unit;

an acoustic environment corrector calculating a coefficient of a filter for the acoustic environment equalizer's equalization, and correcting the equalization by the user; and

an audio signal output device outputting a 3-D audio signal equalized by the acoustic environment equalizer.

14. (Currently Amended) The system according to claim ~~9~~13, wherein the acoustic environment equalizer further includes:

means for equalizing the environmental characteristics between the listener and the audio terminal system in order to accurately reproduce 3-D audio;

means for canceling crosstalk transmitted to right and left ears of the listener; and

means for correcting the characteristics of the acoustic environment automatically or in response to the user's input, according to the information on speakers of the audio system, a listening room's construction, and arrangement of the speakers, transmitted from the acoustic environment corrector.

15. (Original) The system according to claim 9, wherein the user control unit includes an interface that controls each sound source object and the listener's direction and position, and receives the user's control for maintaining realism of sound reproduction in a virtual space to transmit a control signal to each unit.

16. (Currently Amended) A method of controlling an object-based 3-D audio terminal system comprising:

in receiving and outputting an object-based 3-D audio signal, decoding the audio signal applied through a medium, and dividing the audio signal into object sounds, 3-D information, and background sounds;

performing motion processing, group object processing, 3-D sound localization, and 3-D space modeling on the object sounds and the 3-D information to modify and apply the processed object sounds and 3-D information according to a user's selection, and mixing them with the background sounds, wherein motion processing includes analyzing a plurality of object sounds and the 3-D information, calculating a location of each of the object sounds moving with its particular trajectory, and modifying its trajectory according to the user's selection; and

equalizing the mixed audio signal in response to correction of characteristics of the acoustic environment that the user controls, and outputting the equalized signal.

17. (Original) The method according to claim 16, wherein synthesizing the audio scene further includes:

processing a motion effect of each object moving with a particular trajectory, in response to a control signal output from a user control unit;

grouping the object, and calculating and processing a relative location of each grouped object;

processing 3-D sound localization by providing each sound source object having a location defined on 3-D coordinates with directivity in response to a listener's position;

processing 3-D space modeling by providing the object with a sense of closeness and remoteness and spatial effects according to characteristics of a 3-D space; and

mixing the processed sound source object with the background sound object to synthesize a 3-D audio scene.

18. (Original) The method according to claim 16, wherein outputting the audio scene further includes:

equalizing the 3-D audio output according to information on characteristics of the acoustic environment between a listener and the audio system, and information on correcting the acoustic environment applied by the user; and

outputting the equalized 3-D audio scene to provide the same to the listener.

19. (Currently Amended) An object-based three-dimensional audio system comprising:

an audio input unit receiving object-based sound sources through input devices;

an audio editing/producing unit separating the sound sources applied through the audio input unit into object sounds and background sounds according to a user's selection, and converting them into three-dimensional audio objects;

an audio encoding unit encoding 3-D information of the audio objects and object signals converted by the audio editing/producing unit to transmit them through a medium;

an audio decoding unit receiving the audio signal including object sounds and 3-D information encoded by the audio encoding unit through the medium, and decoding the audio signal;

an audio scene synthesizing unit selectively synthesizing the object sounds with 3-D information decoded by the audio decoding unit into a 3-D audio scene under the control of a user;

a motion processor analyzing a plurality of the sound sources and the 3-D audio scene, calculating a location of each sound source moving with its particular trajectory, and modifying its trajectory under the control of the user;

a user control unit outputting a control signal according to the user's selection so as to selectively synthesize the audio scene by the audio scene synthesizing unit under the control of the user; and

an audio reproducing unit reproducing the audio scene synthesized by the audio scene synthesizing unit.

20. (Currently Amended) A method of controlling an object-based 3-D audio terminal system, comprising:

separating sound source objects from among sound sources according to a selection by a user;

inputting 3-D information on the separated sound source objects;

processing sound sources other than the input sound source objects and 3-D information as background sounds;

forming the sound source objects, the 3-D information, and the background sounds into an audio scene, and encoding and multiplexing the audio scene to transmit the encoded and multiplexed audio scene through a medium;

decoding the audio signal applied through a medium, and dividing the audio signal into object sounds, 3-D information, and background sounds; performing motion processing, group object processing, 3-D sound localization, and 3-D space modeling with respect to the object sounds and the 3-D information to modify and apply the processed object sounds and 3-D information according to a user's selection, and mixing them with the background sounds, wherein motion processing includes analyzing a plurality of sound sources and the 3-D information, calculating a location of each of the sound sources moving with its particular trajectory, and modifying its trajectory according to the user's selection; and

equalizing the mixed audio signal in response to correction of characteristics of the acoustic environment that the user controls, and outputting the equalized audio signal.